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EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS ON THE TIAK DIVISION OF THE OUACHITA NATIONAL FOREST IN OKLAHOMA

by

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INTRODUCTION

During July 1976, the Forest Insect and Disease Management Group conducted an aerial survey and subsequent ground examination to evaluate the status of the southern pine beetle on the Tiak Division of the Ouachita National Forest, Oklahoma. The southern pine beetle was first observed in Oklahoma in September 1975 (Drake and Churchill, 1975). Since then the number of southern pine beetle spots has increased from 193 averaging 2.58 trees per spot in 1975 to 464.6 spots averaging 4.6 trees per spot and the total number of infested trees increased from 205 to 3,776.8.

METHODS

Standard aerial sketch map procedures were used in this evaluation.[2/][3/] Nine spots containing 213 trees were examined to determine the cause of mortality, number of affected trees, number of currently infested trees, and the general conditions of the beetle population.

TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis* Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda* L., and shortleaf pine, *Pinus echinata* Mill. are the preferred hosts.

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2/ Detection of forest pests in the Southeast. 1970. USDA, USFS, SA, S&PF, Div. of FPM, Publ. S&PF-7, Atlanta, Ga. 51 p.

3/ The aerial sketch map data for the Tiak Ranger District was provided by the Forest Supervisor's Office, Ouachita National Forest, Hot Springs, Arkansas.

Type of Damage - Tree mortality results from cambial mining by the southern pine beetle as they construct egg galleries. The beetles also introduce blue staining fungi, *Ceratocystis* spp., which block conduction tissues and accelerate the kill.

Life Cycle of the Insect - The beetles attack in pairs and construct winding egg galleries in the cambium. Eggs are deposited along the galleries. Eggs hatch into whitish grubs that further mine the cambium and then construct cells in the outer bark for pupation. After transforming to adults, the beetles emerge. The life cycle is completed in about 30 days during the warmer months. There may be as many as seven generations produced each year.

RESULTS AND DISCUSSION

Results of this evaluation are summarized in Table 1. The data show that the southern pine beetle is currently at epidemic levels on the Tiak Division, both on National Forest and intermingled private lands within the National Forest protection boundary.

All but two infestations examined were active. Based on the size of several of the spots (up to 99 trees), and the large numbers of green infested trees with heavy broods, the population is increasing. The southern pine beetle has a very high biotic potential, and if conditions remain favorable for its development, this insect can cause widespread timber losses in a relatively short period of time. On the Tiak Division, Ouachita N.F., the potential exists for more extensive losses this fall and next spring.

RECOMMENDATIONS

It is recommended that southern pine beetle suppression be continued on the Tiak Division, Ouachita National Forest. This District should continue suppression measures in accordance with the Southern Pine Beetle Control Plan for the National Forests of Oklahoma and FSM 5250. Suppression efforts should be accelerated as necessary to cope with the increasing beetle population.

Many southern pine beetle infestations are now located on private timber land within the National Forest protection boundary. Efforts should be made to coordinate suppression efforts with the Oklahoma State Forestry Office at Broken Bow, Oklahoma. One area of coordination should be to share presuppression survey data on spot size and location so that prompt control action can be initiated on private land. The effectiveness of any control effort is significantly reduced if infested areas are left untreated within the control area.

Table 1. Summary of results of southern pine beetle evaluation conducted on the Tiak Division, Ouachita National Forest, Oklahoma, July 1976

	Ownership Unit Tiak Division, Ouachita N.F.
	FY 1976
1. Results compiled from data collected during the aerial phase of the evaluation:	
Survey type	Aerial Sketch Map
Date of aerial survey	7/7/76
Percent survey	50%
Total acreage surveyed	155,649
Total acreage of Forest Service land	43,133
Susceptible host type acreage of Forest Service land	34,000
Total number of spots within the survey boundary	533.3
Total number of spots on Forest Service lands	464.6
Spots per M acre of host type Forest Service lands	13.7
Average spot size (trees) Forest Service lands	4.6
Range of spot sizes (trees) Forest Service lands	1 - 42
Reds and faders/M acres host type on Forest Service lands	2.3
2. Results compiled from data collected during the ground and aerial phases of the evaluation	
Date of ground phase	7/13/76
Infested trees per M acre of host type Forest Service lands	111.1
Total number of infested trees on Forest Service lands	3,776.8
Total volume of infested trees on Forest Service lands	164.1 MBF
Total number of affected trees on Forest Service lands	5,846.1
Total volume of affected trees on Forest Service lands	254.3 MBF
Ratio of green infested to total red and fading trees	1.74:1

Volume - BF - based on Scribner decimal C log rule. Cords converted to bd.ft. based on 500 bd.ft. per cord.

PRECAUTIONARY PESTICIDE USE STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key--out of the reach of children and animals--away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and burn them in a level, isolated place.